

TITLE

“A DENTAL MATERIAL CONTAINER”

5 The present invention relates to a dental material container.

In accordance with one aspect of the present invention there is provided a dental material container comprising a body including a first chamber and a second chamber separated by a first wall member, a dispensing member separated from the second
10 chamber by a second wall member, and a means for applying pressure to dental material contained within the first chamber, wherein actuation of the means for applying pressure causes dental material within the first chamber to be expelled through the first wall member and mix with dental material in the second chamber and further actuation of the means for applying pressure causes the mixed dental material
15 to be expelled through the second wall member to the dispensing member.

The present invention will now be described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 is a side view of a container in accordance with the present invention in
20 section and in disassembled condition;

Figure 2 is a view similar to Figure 1 with the components of the container in assembled condition;

Figure 3 is a view similar to Figure 2 in which the container is partially activated;

Figure 4 is a view similar to Figure 3 in which the container is fully activated;

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Figure 5 is a side view of an alternative embodiment of a container in accordance with the present invention in section and in disassembled condition;

Figure 6 is a view similar to Figure 5 with the components of the container in assembled condition;

5 Figure 7 is a view similar to Figure 6 in which the container is partially activated;

Figure 8 is a view similar to Figure 7 in which the container is fully activated;

Figure 9 is a side view of an further embodiment of a container in accordance with the present invention in section and in disassembled condition;

10 Figure 10 is a view similar to Figure 9 with the components of the container in assembled condition;

Figure 11 is a view similar to Figure 10 in which the container is partially activated;

Figure 12 is a view similar to Figure 11 in which the container is fully activated; and

Figure 13 is a view similar to Figure 12 in which the container includes an integral dispensing means.

15 In the drawings, there is shown a dental material container 10 which has a hollow generally cylindrical body 11. The body 11 has a first end 12 and second end 13. A receptacle 14 is arranged to be inserted into the body 11 at the first end 12 thereof as shown in Figure 2. The receptacle 14 is of less length than the body 11 and has a first open end 15 and a second end 16. Further the receptacle 14 is hollow and of
20 generally cylindrical shape. The receptacle 14 has a cylindrical wall section 26 which is internally smooth. Also, the wall section 26 of the receptacle 14 is provided with a circumferential groove 17 which engages, in use, with a corresponding internal circumferential rib 18 in the body 11.

Further, the body 11 at the first end 12 thereof is provided with a circumferential recess 19. The recess 19 engages in use with an outwardly extending circumferential rib 20 at the first end 15 of the receptacle 14. Thus, as shown in Figures 2, 6 and 10 when assembled the receptacle 14 extends partially into the body 11 with the groove 17 in engagement with the rib 18. At the second end 16 of the receptacle 14 there is provided a transverse first wall member 22 which has a central weakened portion 24. The weakened portion 24 may be formed of a relatively thin portion of the first wall member 22. The second end 16 of the receptacle 14 is, as shown, inserted foremost into the body 11 at the first end 13 thereof.

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Further, a plunger 30 is arranged to be inserted into the receptacle 14 when the latter is assembled as shown in Figures 2, 6 and 10. The plunger 30 is of generally cylindrical external shape and has an outwardly extending flange 32 at an outer end 34. Initially, as shown in Figure 2, the plunger 30 is inserted partially into the receptacle 14.

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Still further, an inner end 40 of the plunger 30 is spaced from the first wall member 22 in the initial position of the plunger 30 to form a first chamber 42. A second chamber 44 is located between the first wall member 22 and the second end 13 of the body 11. The second end 13 of the body 11 is formed with an end second wall member 46 having a central weakened portion 48. The second end wall 46 may be provided as a wall extending across the body 11 to close off the end 13 thereof with a weakened portion 48 being formed by a portion of relatively thin material compared to the remainder of the second wall member 46 as shown in Figures 1 to 4. Alternatively,

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the weakened portion may be provided by the second end 13 of the body having an opening 25 across which is secured a membrane 48a, as shown in Figure 5 to 8.

Further, a dispensing member 50 is mounted to the second end 13 of the body 11.

5 The dispensing member 50 of Figures 1 to 8 has a base 51 provided with a recess surrounded by a cylindrical wall 52. The cylindrical wall 52 fits over the second end 13. Also, the cylindrical wall 52 has an internal circumferential rib 54 which snap fits with a circumferential groove 56 (see Figure 1) on the body 11 adjacent the second end 13. Further, the body 11 is provided with a circumferential flange 58 against
10 which the wall cylindrical 52 abuts in the assembled condition shown in Figures 2, 6 and 10.

Further, the dispensing member 50 is provided with a curved dispensing nozzle 60 which may be of substantially uniform internal thickness. Alternatively, the
15 dispensing nozzle 60 may be tapered so as to have a smaller end internal thickness.

In a further embodiment of the invention, as shown Figures 9 to 12, the body 11 is provided with an integral dispensing member 50. In this embodiment, the dispensing member 50 is provided with a screw connection 53 to which can be secured a
20 dispensing nozzle 60 (not shown). The dispensing nozzle 60 may comprise a bent tube attached to a plastic hub arranged to connect to the screw connection 53. In this embodiment, the second wall 46 is provided as a separate disc member 47 which is arranged to be inserted into the body 11 where it rests against an internal shoulder 49

of the body 11 adjacent the dispensing member 50. The disc member 49 is provided with a central weakened portion 48b.

Figure 13 shows a container similar to that of Figure 9 wherein the container includes
5 an integral dispensing nozzle 60. The integral dispensing nozzle 60 may also be curved or angled with respect to the body.

In use, the container 10 is assembled in the condition shown in Figure 2. Further, a quantity of particulate material is placed in the container 10 before the receptacle 14 is
10 engaged with the body 11. Thus, the particulate material is contained in the second chamber 44 in the condition of the container shown in Figures 2, 6 and 10. Then a quantity of liquid is placed in the receptacle 14 before the plunger 30 is engaged therewith. Thus, the first chamber 42 contains the quantity of liquid in the condition shown in Figures 2, 6 and 10.

15 Subsequently, when the container 10 is used the plunger 30 is manually depressed until it reaches the position shown in Figures 3, 7 and 11 at which the end 40 abuts the first wall member 22. This action applies pressure to the quantity of liquid which correspondingly applies hydraulic pressure to the first wall member 22. This causes the weakened portion 24 to rupture and the quantity of liquid to be expelled into the
20 second chamber 44. The liquid is thus admixed with the particulate material. The liquid and particulate material are thoroughly admixed into a homogenous dental composition by placing the container 10 in the condition shown in Figure 3 into a vibratory mixer of known type.

Then the container 10 is removed from the mixer and the plunger 30 is depressed further to the position shown in Figures 4, 8 and 12 at which the end 40 abuts the second wall member 46. This action causes the dental composition to apply pressure to the weakened portion 48 of the second end wall 46. The weakened portion 48 is ruptured and the dental composition is expelled through the dispensing nozzle 60 of the dispensing member 50 directly into a tooth of a patient.

The container of the present invention is particularly envisaged for use with dental materials.

Further, as shown in the drawings the body 11 may be formed with a plurality of internal longitudinally extending grooves 62 in the chamber 44 to assist in expelling air from the chamber 44 upon movement of the plunger 30 to the position shown in Figure 4. While the grooves 62 shown in the Figures extend only part way along the body 11, the grooves 62 may extend all the way to the first end 12. Other known means of expelling air from the body 11 such as uneven or roughly textured internal surfaces may also be employed.

Modifications and variations as would be apparent to a skilled addressee are deemed to be within the scope of the present invention